

DuPont™ Teflon® FEP TE-9568

FLUOROPOLYMER RESIN

Product Information

DuPont™ Teflon® FEP TE-9568 Aqueous Dispersion

Brand

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Description

DuPont™ Teflon® FEP TE-9568 fluoropolymer resin is a negatively charged, hydrophobic colloid containing approximately 54% (by total weight) of 0.1 to 0.30 µm fluorinated ethylene propylene (FEP) particles suspended in water. It also contains approximately 6% (by weight of FEP resin) of a nonionic wetting agent and stabilizer. Color is off-white and nominal pH is 10.0. Viscosity at room temperature is approximately 25 cP.

Teflon® TE-9568 is a general-purpose dispersion. It can be used to impart some of the unique properties of Teflon® FEP resin to end products that would be difficult to make using traditional melt extrusion processes. It can be used to coat or impregnate porous structures or to make thin films. It can be coated and melt bonded to polytetrafluoroethylene (PTFE) resin or used as a hot melt adhesive.

The Teflon® FEP resin in TE-9568 is a true thermoplastic, providing superior properties typical of the fluoropolymer resins: retention of properties after service at 204°C (400°F), useful properties at -240°C (-400°F), chemical inertness to nearly all industrial chemicals and solvents, and excellent dielectric properties. Refer to Table 1 for typical property data.

Typical End Products

Teflon® FEP TE-9568 is suitable for many end products, including: heat-sealable top coatings for PTFE-coated fabrics used for belting, circuit boards, or electrical insulation; cast film for capacitors or chemical barriers; and as a hot melt adhesive for bonding molded PTFE or FEP parts to themselves or to each other.



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FDA Compliance

Properly processed products (sintered or melted at high temperatures common to the industry) made from Teflon® FEP TE-9568 can qualify for use in contact with food in compliance with FDA Regulation 21 CFR 177.1550 and the German BGA. Products made from unsintered dispersion do not comply.

Processing

Conventional dip or flow techniques can be used for coating or impregnating other products with Teflon® FEP TE-9568. The resin particles can be consolidated by heat into a coherent matrix or coating or left as particles to influence the properties of a finished product.

Dip coating can be used to apply resin continuously to uncoated woven fabrics or fabrics already coated with PTFE. Successive passes must be used to build up thickness slowly, without cracks. Each coating layer is usually dried to remove water (typically at 107°C [225°F]), baked to remove wetting agents (typically at 250°C [482°F]), sometimes calendared, and finally heated above the crystalline melting point of the resin particles (approximately 265°C [509°F]). Glass, PTFE, Nomex® aramid fiber, Kevlar® aramid fiber, or other high-temperature resistant substrates must be used.

Products utilizing entrained FEP resin particles only for their lubricating or hydrophobic properties are dried and baked, but not heated above the crystalline melting point of the particles. The dispersion wets internal surfaces and promotes penetration of the extremely small particles.

Other solid or liquid ingredients can be added to Teflon® FEP TE-9568 to provide specific processing or finished product behavior.

Safety Precautions

WARNING!

VAPORS CAN BE LIBERATED THAT MAY BE HAZARDOUS IF INHALED.

Before using Teflon® FEP TE-9568, read the Material Safety Data Sheet and the detailed information in the "Guide to the Safe Handling of Fluoropolymer Resins," latest edition, published by the Fluoropolymers Division of The Society of the Plastics Industry or the "Safe handling of Fluoropolymer dispersions" published by the APME — available from DuPont.

Open and use containers only in well-ventilated areas using local exhaust ventilation (LEV). Vapors and fumes liberated during hot processing, or from smoking tobacco or cigarettes contaminated with Teflon® FEP TE-9568 fluoropolymer resin, may cause flu-like symptoms (chills, fever, sore throat) that may not occur until several hours after exposure and pass within about 24 hours. Vapors and fumes liberated during hot processing should be exhausted completely from the work area; contamination of tobacco with polymers should be avoided.

Mixtures with some finely divided metals, such as magnesium or aluminum, can be flammable or explosive under some conditions.

Teflon® FEP TE-9568 contains additives in the aqueous phase that are irritants. In case of skin contact, flush with water immediately. In case of eye contact, flush with water immediately and get medical help.

Storage and Handling

The dispersion particles in Teflon® FEP TE-9568 fluoropolymer will settle on prolonged standing (six-month shelf life) or on heating above 66°C (150°F). They usually can be redispersed by mild agitation. Drums may be rolled or the product stirred gently just prior to use. The dispersion must be protected from freezing, which will cause irreversible settling.

Ammonium hydroxide is used by DuPont to set pH to approximately 10 at the time of shipment. High ambient temperatures can deplete the ammonia level and reduce the pH. Declining pH eventually favors bacterial growth, which causes odor and scum. The pH should be measured and maintained between 9.5 and 10.5.

Both very high and very low temperatures may be detrimental. Dispersions must not be allowed to freeze. The optimum storage temperature range is 7–24°C (45–75°F), with temperatures low in the range preferred. Storage at 7–32°C (45–90°F) is acceptable within nominal shelf life for standard dispersions. If dispersions are to be stored for extended periods beyond their nominal shelf life, low-temperature storage is especially desirable because the particles are harder at lower temperatures and, therefore, less likely to stick together as they settle.

High-speed stirring, pumping, or any other violent agitation must be avoided to minimize sheared particles or coagulation and to minimize foaming. Ideally, the dispersion should be conveyed by gravity from storage to processing stations.

Storage and handling areas should be clean. Keep dispersion drums closed and clean to avoid both contamination and coagulation by drying at the liquid surface. High processing temperatures will cause even very small foreign particles to become visible or to make defects in finished products. Good housekeeping and careful handling are essential.

Packaging

Teflon® FEP TE-9568 is packaged in 19- and 114-L (5- and 30-gal) nonreturnable drums.

Freight Classification

Teflon® FEP TE-9568, when shipped by rail or express, is classified "Plastics, Synthetic, Liquid, NOIBN." Resin shipped by truck is classified "Plastics, Materials, Liquid, NOI."

Table 1
Typical Property Data for DuPont™ Teflon® FEP Fluoropolymer Resin Dispersion Grade TE-9568

Property	Test method ⁽¹⁾		Unit	Typical value
General				
Color		–	–	Off-white
Melt flow rate of resin (MFR 372/5,0)	ISO 12086	D 2116	g/10 min	7.0
Density of dispersion	ISO 8962	–	g/cm ³	1.41
Average dispersion particle size, diameter		–	µm	0.18
pH of dispersion	ISO 1148	E 70	–	10.0
Solids content	ISO 12086	D 4441	%	54
Resin dry weight (54% solids)		–	g/l (lbs/gal)	760 (6.4)
Viscosity of dispersion	ISO 2555	D 2196	mPa·s (cP)	25
Thermal				
Melting point of resin		D2116	°C	260

Note: There is no ASTM standard for DuPont FEP TE-9568 dispersion.

Typical properties are not suitable for specification purposes.

Decimal point represented by a period (.)

⁽¹⁾ ASTM unless otherwise specified.

For more information call (302) 479-7731

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CAUTION: Do not use in medical applications involving permanent implantation in the human body or contact with internal body fluids or tissues. For other medical applications, see "DuPont Medical Caution Statement," H-50102.

